

Female Foeticide in Rural Haryana

Second Edition

April, 2001

Impression

200

Production

Avinash Saini
Sunil Kumar Sah
Subhash

Printed at

Sarvahitkari Mudranalaya,
Daya Nand Math, Gohana
Rohtak.

Community Health Cell
Library and Information Centre
367, " Srinivasa Nilaya "
Jakkasandra 1st Main,
1st Block, Koramangala,
BANGALORE - 560 034.
Phone : 5531518 / 5525372
e-mail:sochara@vsnl.com

Printed and published by

SEARCH

State Resource Centre, Haryana,
42/29, Chanakya Puri,
Near Shiela Cinema, Sonapat Road,
Rohtak-124001.

☎ : 01262-44916.

FEMALE FOETICIDE IN RURAL HARYANA

A Study by

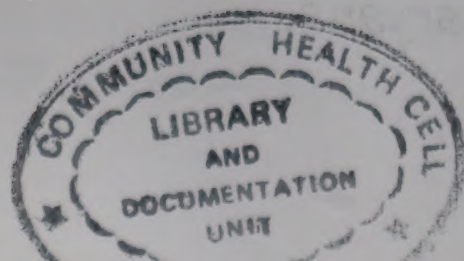
Dr. Sabu M. George
&
Dr. R.S. Dahiya

SEARCH

State Resource Centre, Haryana.

REMALE FETTER IN RURAL HARYANA

A Study by
Dr. R. S. Datta
&
Dr. R. S. Datta



WH-142
07922 p01

PREFACE

Literacy has been by now recognized as the basic window through which awareness of a population can be enhanced. A literate nation can make full utilization of all its resources, including the most precious human resources, for its development and growth. In particular, there are a number of social and economic issues that demand attention and tackling in some of the backward societies and nations. India, the ancient nation that it is and trying to march forward in every sphere of humane endeavour, is seized of social issues like the purdah system, child marriage, dowry and even sati that are of regressive nature. Most of them pertain to society as a whole and have their origins in the oppression of women by men and women. Women form about one half of the total population, and they are unquestioningly controlled by the dominant patriarchal values that give no chance for women to have control over their own lives. Men are often reluctant and sometimes even hostile to social and legal reforms to bring about any changes that take away their hold over the women's lives. Under these adverse circumstances, it becomes imperative that women themselves make efforts to improve their lives. Towards those ends, literacy of women becomes the means.

Literacy of women becomes important if only women exist or are allowed to exist physically in society in the first place. Allowing the natural sex ratio of males to females in any society to maintain itself would yield some place to women to exist in that society. The patriarchal value system in Indian society however puts a high premium on males and very little on females. The 'sons-only' syndrome finds ways and means to eliminate, sometimes overtly and sometimes covertly, the daughters if and when they are born resulting in female infanticide. Of late, the female infants are not even allowed to be born thanks to some of the latest technologies like ultrasonography that reveal the sex of the fetus in the womb itself and through other sex determination tests. These modern technologies have become the tools for what has come to be known as 'female feticide' in which the female of the species is destroyed right inside the womb before it actually takes birth. The yearning for, begetting and nurturing of 'sons-only' is thus fulfilled and the patriarchal values are further strengthened, acting as cultural determinants.

Empirical observations and scientific studies have shown that male/female sex ratios at birth in several Asian countries have been severely distorted, India being no exception to such distortions. The normal male/female ratio (105) at birth has been found to have become less in some of the northern states and in the north-western parts of India in the last about twenty years. The simultaneous proliferation of sex determination clinics during the said period in some of the cities in the north and in the western region of the country strongly suggested that indeed modern technologies are consciously being made use of in resorting to 'female feticide'. So it becomes a matter of great social as well as national concern.

The 1991 census shows that fifteen of the twenty districts with the highest child sex ratios (male/female) were in the states of Haryana and Punjab in north-west India. The reason put forward by some researchers in demographic studies referred to "biological peculiarity of the women in these districts" to result in a highly distorted sex ratio at birth. However, a UNICEF report asserted that "female feticide is reported to be a cause for adverse sex ratios in some Indian districts in the 1991 census". These conflicting hypotheses demanded a detailed study as to the real cause(s) for the distorted male/female sex ratios.

The State Resource Centre Haryana located at Rohtak has been and is involved in creating and sustaining literate human resources, in particular literate female human resources. The State Resource Centre thought it worthwhile to sponsor a study in Rohtak district to possibly arrive at some conclusions regarding the causes for the recorded high child sex ratios. Also it is well known that Haryana has the highest males/females ratio in the country-much above the national average. Accordingly the State Resource Centre happened to have commissioned a study in Rohtak district on "Female Feticide in Rural Haryana" with Dr. Sabu M. George, Consultant, Pondicherry Science Forum and Visiting Professor, Society for Applied Studies, Calcutta and Dr. Ranbir Singh Dahiya, Associate Professor, deptt of surgery, PGIMS, Rohtak, President, Haryana Gyan Vigyan Samiti as the investigators.

The investigators have made an intensive study of the abuse of pre-natal diagnostic techniques for sex selection in a rural population of about 13,000 in Rohtak district in Haryana. They seem to have found that the 'sons-only' syndrome has been perpetuated by resorting to female feticide, using the modern technological tools, thus reinforcing patriarchal values as cultural determinants.

In a society, if high levels of gender inequality are allowed, it is only logical to expect skewed sex ratios and few women available to a given number of men (resulting in a

polyandrous society over a period of time) to lead normal lives. This could result in more atrocities on women in the form of rapes etc, health problems of women, emotional disturbances and even economic exploitation. To obviate the impending female deprivation and to encourage raising the status of women, the recommendations given by the present investigators are not only worth being the consideration of policy makers but ought to be actually implemented by the State through both governmental structures and voluntary organizations. While it is true that gender disparities in education have to be minimised, economic opportunities have to be created, inheritance laws including property right have to be enacted, and political power has to be shared alongside men, the problem of gender disparity can only be tackled through literacy 'campaigns' that have to graduate into 'movements' to empower women in the real sense to enable them to take care of the various dimensions of their lives all be themselves as the Kerala experiment has amply demonstrated.

The State Resource Centre, Haryana feels purposeful to have commissioned a study of the kind conducted by the two eminent researchers, Dr. Sabu M. George and Dr. Ranbir Singh Dahiya that is presented in this report.

Pramod Gouri
Director.

ABSTRACT

Female foeticide, over the last fifteen years, has distorted sex ratios at birth in several Asian countries. Foetal sex determination clinics have been in existence for the last about two decades in Indian cities in the northern and western parts of the country. Ultrasound imaging for sex determination tests of fetuses is being abused. The concerns expressed by feminists about the impact of female foeticide in India on sex ratios have been often dismissed by social scientists.

Presented here are results of an intensive study of the abuse of pre-natal diagnostic techniques for sex selection in a rural population of about 13,000 in Rohtak district in Haryana. It was found that parents tend to be calculative in choosing the sex of the next child, and the decision is based on the birth order, sex sequence of previous children and the number of sons. Some families resort to aborting even the first pregnancy if the foetus is female. In the cohort born in the last five years the sex ratio at birth (SRB) of boys to girls for upper castes comes out to be 1.27, suggesting that about 17% of female foetuses were aborted. The intensity of son preference appeared to be less among the Harijans. Women, in group discussions, accepted that incidence of female foeticide has been on the rise in recent years. The study reveals that transfer of reproductive technology to India has led to deleterious effects, and its abuse has been resulting in reinforcement of patriarchal values.

INTRODUCTION

Strong preference for sons over daughters exists in the Indian sub-continent, East Asia, North Africa and the Middle East unlike in Western countries (*Muthurayappa et al 1997, Lancet, 1990, Okun, 1996*). People plan to have smaller family sizes with relatively greater number of sons. Of late, this is being achieved by using the following methods:

- 1) *Pregnancies are planned by resorting to 'differential contraception' - contraception is used based on the number of surviving sons irrespective of the family size (Okun, 1996).*
- 2) *Following conception, foetal sex is determined by pre-natal diagnostic techniques after which female foetuses are aborted (Park and Cho, 1995, Arora, 1996).*

China adopted a 'one child family' norm in 1979, and the phenomenon of millions of "missing girls" was recognised by the early 1990's (*Coake and Banister, 1994*). Female foeticide was a major cause for this imbalance. As fertility declined rapidly in East Asian countries (South Korea, Taiwan, Hong Kong) selective abortion of female foetuses increased, leading to rising sex ratios at birth (SRB – male/female), over the last 10 years (*Park and Cho, 1995*).

In India the population sex ratio (m/f) which was 1.03 in the 1901 census rose relatively consistently to 1.08 in 1991 (*National Commission for Women, 1994*). Indian medical researchers who pioneered amniocentesis in 1975 said that it would assist those Indian women who keep on reproducing just to have a son although this may not be acceptable to 'persons in the West' (*Verma et al 1975*). Since then the contribution of sex determination tests (SDTs) to the rising sex ratio has been vigorously debated (*Lancet, 1983, Chhachhi and Satyamala 1983, Kumar, 1994*). While urban feminists demanded legislation against SDTs, several social scientists felt that SDTs had little impact on sex ratio (*Forum against Sex Determination and Sex Pre-selection 1983, Rajan et al 1992*).

According to the 1991 census, fifteen of the twenty districts with the highest child (0 to 6 years) sex ratios were in the states of Haryana and Punjab in north-west India. A well-known demographer suggested that the distortions in child sex ratio in the north-western region for the last hundred years could be due to biological peculiarity of these women to have a highly distorted sex ratio at birth, in favour of boys (*Premi, 1994*) ! However, UNICEF argues

that "female foeticide is reported to be a cause for adverse sex ratios in some Indian districts in the 1991 census" (UNICEF, 1994). Therefore, we selected villages from one such district (Rohtak) in this region of Haryana, to investigate if indeed SDTs were being performed and, if so, to measure their impact on sex ratios. We examined the role of doctors and also considered the contributions of contraception and the social practice of female infanticide in skewing the sex ratio.

SUBJECTS AND METHODS

GEOGRAPHICAL LOCATION AND BACKGROUND

Haryana was part of the composite Punjab State till 1966. This region has witnessed tremendous economic progress over the last 30 years due to the 'green revolution' (*Singh, 1997*). Haryana's per capita income is among the highest and fastest growing in the country (*UNDP, 1997*). Consequently, poverty reduced by more than 50%. But the Anthropological Survey of India reports that the status of women in Haryana continues to be a matter of grave concern.

Bharat Gyan Vigyan Samiti (BGVS) has been active in promoting literacy. It worked with the District Administration (1991-95) and succeeded in enrolling 1.15 lakh illiterates in the Literacy Campaign. Ninety percent of the neo-literates and their instructors were women. BGVS provided medical relief during floods and epidemics. It organised successful public campaigns in Rohtak to persuade private clinics to remove advertisements promoting fetal sex determination (*Chowdhry, 1994*). After literacy efforts far more villagers started coming to the Medical College Hospital at Rohtak instead of visiting private clinics in the city.

SELECTION OF STUDY VILLAGES

MOTIVATION

Following completion of the literacy endeavour in 1995, BGVS undertook a survey in thirty six villages where there was good community participation. This survey was initiated because of the impression gathered by the literacy activists that in some villages about half of the pregnancies were terminated after Sex Determination Tests (SDTs) as they were detected to be carrying female foetuses. As the enumeration was done by the village activists, only limited information on children could be elicited. Demographic data such as birth order of children, timing of pregnancy outcomes and assessment of completeness of the survey were

not available from those attempts. This field research is therefore a systematic effort to follow up on indications of rampant female foeticide, and was initiated in June 1996 in six villages of Rohtak district in Haryana.

CRITERIA

Given the sensitive nature of induced abortions and as it is a criminal offense to conduct SDTs, we could not undertake a truly random survey of women in the district. We wanted to obtain reliable information on deliberate termination of female fetuses and neglect of girls from the women themselves. Given the background of our past social commitments, our attempt was to identify villages in which there was the greatest likelihood that communities would trust our intentions. An open dialogue on SDTs could have been possible only when women could confide about such matters without fear of being victimised. Therefore, we chose to select villages where we had the most respected women literacy activists. These women activists happened to have developed excellent rapport in their villages. Some of these empowered women later got elected as members and even chiefs of village panchayats. The study villages were identified by consulting the three district literacy women coordinators who independently ranked the women activists present in the thirty-six villages.

ACTUAL SELECTION

The six study villages come from five blocks of Rohtak out of the total twelve blocks. By the time this study reached the stage of completion, Rohtak district had come to be administratively subdivided into two districts - Rohtak and Jhajjar. Today, our study villages come from both these districts.

METHODOLOGY

DISCUSSIONS WITH MEDICAL PRACTITIONERS AND OTHERS

First we interviewed some of the leading obstetricians and medical practitioners of SDTs in Rohtak city and the women doctors of Department of Obstetrics & Gynaecology and

Radiology of the Post Graduate Institute of Medical Sciences (locally known as Medical College Hospital and henceforth referred to as MCH). We ascertained their perceptions about and involvement in SDTs. The role of ultrasound scans in ante-natal care was also ascertained. They were asked if SDTs could result in raising the status of women.

INTERVIEWS WITH INDIVIDUAL STUDY WOMEN

Sampling Strategy

To reduce recall errors, instead of interviewing all village women, we confined interviews to women who had experienced a pregnancy outcome in the last five years. There were 1022 eligible women. The criterion of using 'pregnancy outcome in the last five years' included almost all outcomes in the study villages in the recent past, as the average interval between successive births in Haryana is twenty eight months (NFHS, 1993). Our sampling excluded just four women who had a previous pregnancy outcome and were currently pregnant. They were excluded as they had experienced no outcome in the last five years. The entire history of pregnancies of study women is necessary for us to understand family building strategies and to obtain accurate birth order of recently born children.

Interview Strategy

Women were interviewed at their homes in the presence of the local women activists. Pregnancy history was elicited from each study woman, beginning with the last outcome. This demographic method is known to produce excellent results with minimal loss of information. We asked very few questions in order not to be suspected by the community as accomplices of the Health Department. From our past experience of interaction with rural women, we were aware that any suspicion of being associated with the coercive 'family planning' tactics adopted earlier would make women unwilling to reveal sensitive aspects of their reproductive history. We deliberately avoided asking individual women whether they went for SDTs as we did not want to make women feel guilty for not having borne the desired number of sons. Rural men seem to blame the women for not producing enough sons. Some husbands were found to have married a second time because the first wife did not bear a son.

98.9% of these interviews were conducted by trained local women. Nearly 50% of the interviews in each of the six villages were conducted by the same interviewer. No study-woman refused to cooperate for the individual interviews.

VALIDATION OF MOTHER - REPORTED INFORMATION WITH PROSPECTIVELY RECORDED OFFICIAL DATA

We shared the findings with village women in twenty - two group meetings. On an average, twenty women attended these sessions in each hamlet. We sought their explanation for any observed gender imbalances. We asked about discrimination against girls. In areas where there was no distortion of SRB, we enquired if the practice of female foeticide was prevalent.

OUTCOMES PRESENTED AND REPRODUCTIVE TECHNOLOGIES CONSIDERED

In the course of field work, qualitative information and sociological data related to the practice of female foeticide were obtained. These strengthen some of the findings presented such as caste differentials in feticide. They also throw light on the fact that foeticide is not an isolated phenomenon but one of several ways in which patriarchy demeans women; others being violence against women (Jejeebhoy, S.J, R.J Cook 1997), women-unfriendly inheritance practices, customary marriage conventions which result in a significant proportion of women being married before 18 years of age, and coercion of widows to undergo levirate marriages facilitated by state administrative directives. However, within the scope of the present study, only data on sex ratio distortions and information related to abuse of medical technology by doctors are presented here.

(In this paper we do not consider sophisticated reproductive technologies such as X-Y sperm selection or pre-implantational genetic diagnosis (PGD) which enable families to choose the sex of the child without having to resort to abortion (Ramsay, S (1993) and Parikh, F (1998). In X-Y separation, male sperms are separated and are used to fertilise the egg. In PGD the pre-embryos are sexed for the selective destruction of the female pre-embryos (female embryocide). The validity of these methods appears to be uncertain outside the research labs which developed them. Also, these very expensive methods are presently available only in a handful of clinics in a few cities.)

RESULTS

Virtually all (99.5%) study women were interviewed and 94% of the respondents were mothers themselves. The social, demographic and educational characteristics of families of these women are described in Table-1 (see page 27). The duration of cohabitation after marriage ranged from 1 year to 30 years (mean = 8.7). Thirteen women had children who were already married. Jats and Yadavs are the cultivating castes who own most of the land. Harijans are the poorest section in this agrarian society and are primarily labourers of the land owning castes. There is gross disparity between the educational status of men and women.

The pregnancy outcomes reported by the women were 2642 live births, 48 still births and 272 abortions (243 spontaneous and 29 induced). 66.5% of live births were of orders 1 and 2; only 1.4% of children were of orders greater than 6. There were thrice as many families having more than two surviving girls as compared to those having more than two sons (110 vs. 37 respectively). The study women had a maximum of five live born sons whilst the maximum number of live born daughters was nine. Just 14% of the families account for 34% of girls while having only 21% of boys. Over 48% of mother reported deaths in the cohort born in the past five years were not captured by the government workers. The official records revealed that only two mothers had not reported the deaths (one female each) of their children to us. Subsequently, both mothers confirmed that the deaths did occur.

Thus the onus of contraception was almost entirely on women. Tubal ligation (sterilisation) was virtually the only form of contraception used (270 women vs. 1 man). The percentage of sterilised women increased as they had more surviving sons Table 2, (see page 28). Such a strong rising trend was not evident with increasing number of girls. Just one mother got sterilised with no surviving boys while sixty nine mothers who had no surviving daughters got sterilised. Furthermore, the family size and sex composition of the surviving children of women who are pregnant (N=129) at the time of interview indicated that the rates of pregnancy were higher among women who had relatively less number of surviving sons than daughters. Within each family size more than one, the current rate of pregnancy was five to six times higher for mothers who had no sons as compared to mothers who had several sons.

A manifestation of intense son preference in a population is that for a given family size the sex ratio of the last born child will be greater than 1.06 (i.e. skewed towards male). This is demonstrated by using the "gender preference indicators", family size sex ratio (FSSR) and the sex ratio of the last born child (LCSR). Family size refers to the total number of live born children. Table-3 (page 29) indicates the sex ratio for each family size. The FSSR monotonously declines as the family size increases from one to ten Table-3, (see page 29) while the LCSR is generally more elevated than the FSSR. Both FSSR and LCSR are much higher for completed (sterilised) families Table-4, (see page 30) with the exception of birth orders greater than 5 where due to small sample sizes the ratios are not stable.

A different strategy which some parents adopt to limit family size of surviving children and to eventually have the desired number of sons is female infanticide (George *et al* 1992). Direct infanticide refers to killing of infant usually immediately after birth. Indirect infanticide is death caused a little later after birth, due to intentional neglect. This could be by inadequate child care, or by poor food related practices or health related neglect. Of the 2642 liveborns, 2327 children were still surviving at the time of interviews Table-5, (see page 31) and Table-6, (see page 32). We confine detailed examination of mortality to the cohort born in the last five years as the recall errors are minimal for recent events and also because records for validation from official sources were only available for this period. Further, this cohort represents virtually the total population of pre-school children in the villages. For this cohort, both sex ratio at birth (SRB) and sex ratio of surviving children at the time of survey are 1.20. Mortality data suggests that there is no excess girl mortality in the early neo-natal or late neo-natal phase Table 6, (see page 32). But there appears to be excess girls' mortality in the post neo-natal phase and girls are at risk of significantly greater mortality after the first year of life. Ethnographic information indicates the existence of direct female infanticide. Excess female mortality in the post-neonatal and later childhood stages suggests the occurrence of indirect female infanticide. Disaggregation by caste indicates that there is no excess post-neonatal girl mortality in Harijans but it exists among the upper castes.

Another indicator of deliberate discrimination against girls is the survival of live borns in twin pairs. The women reported that sixteen twins pairs were born alive (23f+9m). The mortality rate of the females was higher than that of males (57% as against 44%). One manifestation of discrimination against girls is the observation that the inter-birth interval between successive live born children is shorter if the preceding child is female. This

observation has been reported from Haryana State as a whole also (*NFHS, 1993*). We found greater discrimination towards females in the upper castes as compared to the Harijans (difference is 48 days as against 29 days).

Demographers consider the SRB of children born in last five years as the most sensitive index of current gender imbalance at birth in society. Table-7, (page 32) suggests that SRB for all birth orders for recently born children is masculine including the first birth order. The SRB for the Harijans (lower caste) was 1.02 whilst among upper castes it was 1.27. The SRB of upper caste children rose from 1.26 to 1.89 as birth order went up from 1 to 5 (above 5 numbers are too small and therefore the ratio is not dependable). A similar rising trend was not seen in Harijans. The SRB kept increasing over the last 5 years among the upper castes. It increased from 1.15 to 1.42 from the first 2.5 years to the next 2.5 years. In fact, in the last year, the SRB was as high as 1.80. Apart from birth order, the sex composition of the preceding born children seems to be an important determinant of the sex of the next child Table-8, (see page 33) in the upper castes. Within each birth order, sex ratio of the next child increases as the number of preceding girls increases. (We stopped with order 5 as there are very few children to fill the increasing m/f combinations.) For each birth order, generally the ratio is often closer to the natural sex ratio (1.06) when the preceding number of male children is the highest. For families with no boys, the SRB of the next child increased from 1.47 to 2.50 as the preceding number of girls went up from 1 to 4.

We presented the results of individual women-interviews at discussions held in the hamlets. There was universal awareness of SDTs and most knew where to go for the tests and abortions. In upper caste hamlets there was open admission of the widespread practice of female foeticide. At a few places the women blamed doctors who are doing this for money. Some women complained that the first concern of their families following pregnancy is to put pressure on them to determine the sex of the unborn. If it is a boy, then only is the need for ante-natal care felt. In Harijan areas where the distortions in sex ratios were least Table 7, (see page 32), there were denials about the practice.

From our dialogue with doctors in Rohtak city, the following emerged. ultrasonography is abused for sexing fetuses; more doctors are now buying ultrasound machines and some are taking it in cars to villages; the only difference after the national law was passed in 1994 has been that the cost of the test has doubled (now about Rs 900). Almost everybody, including women MCH doctors felt that selective abortion of female fetuses would increase the status

of women. They were unanimous in the positive role of ultrasound in normal pregnancies. The only dispute between the radiologists and the obstetricians of MCH was on the issue as to who was most competent to do the scanning!

Ultrasound is used in the MCH for routine confirmation of pregnancy as problems were experienced in getting kits for the urine test. Neither does the MCH reveal the sex of the foetus nor conduct sex selective abortions. Following popularity of sex selective abortions, the O & G Department in MCH decided a few years ago not to train their postgraduates in mid-trimester abortions as it was felt that students would later be practising female foeticide. However, they were forced to rescind the policy after two years when they started getting referrals of botched abortions from their alumni. This decision was reversed in the interests of the lives of mothers.

(We also met about 150 village level literacy activists in Jind district along with a Senior Medical Officer to be informed of SDT practices. Jind is adjacent to Rohtak and has the highest m/f sex ratio in Haryana. Jind activists told us about the widespread practice of female foeticide. Despite Jind being one of the most backward districts in Haryana, ultrasonography, a modern technology, is extensively abused.)

DISCUSSION

Families continue to have children till they have adequate number of surviving sons. Consequently, small families have more sons while large families have more daughters. That family size is inversely related to the FSSR suggests differential stopping by contraception Table-3, (see page 29). It appears that most women want to have at least two sons. When two surviving sons are ensured, nearly 50% of women go for sterilisation Table-3, (see page 29). There is some evidence that with two sons and one daughter nearly 75% of women go for sterilisation. Our findings about completed families (sterilised women) are consistent with those reported for India (*Arnold, 1996*). Sex ratio of surviving children of sterilised couples is significantly higher than that for couples not using any contraception (1.25 vs. 0.97). The marginal excess of girls in our total study-children (1342f vs. 1300m) is itself a reflection of intense son preference. Our sample consists of all women in the villages who had a pregnancy outcome in the last five years and the study-children comprise of *all* their children. This included some mothers who were desperate for sons, for instance, seven were willing to have six to nine girls just to have one or two sons.

It is imperative to examine the role of female infanticide in increased m/f sex ratio as it was prevalent earlier in this region(*Chowdhry, 1994*). There have also been reports of its persistence in the present times (*Kakar, 1980*). Though direct infanticide has been known for centuries, a systematic investigation of the phenomenon is of recent origin(*George et al 1992, George, 1997*). We have an estimate only from the state of Tamil Nadu where direct female infanticide accounted for 8% to 10% of all infant deaths in 1995(*Athreya and Chankath, 1997*). In this study, direct infanticide affects just 0.99% of the live born females and therefore, can account for only a fraction of the observed gender imbalance in surviving pre-school children. The existence of indirect female infanticide in our study area is consistent with the finding of excess girl mortality in Haryana(*NFHS, 1993*). This pattern has been reported from many parts of the sub-continent (*Das Gupta, 1996*). There is no known bio-medical reason to explain the observed higher risk of mortality for females born in a twin pair. Village women rationalised the excess mortality of females by saying that mothers can take care of only one child. Such

unspoken social approval for severe neglect of females within a twin pair has been witnessed in South India by the first author and also reported by others (*Miller, 1985*). The inter birth interval after a girl is shorter because girls are breastfed for a lesser period than boys (19% less, from government data, NFHS, 1993).

After consideration of mortality experiences we conclude that past mortality of girls cannot explain the masculinity in sex ratios of surviving children (the higher post-neonatal girls' mortality is offset by higher early neo-natal boy-mortality). However, mortality data does provide corroborative evidence for deliberate discrimination against girls. Demographically, SRB will not be affected by differential contraception but the sex ratio of the last born child will be higher than normal (*Coale and Banister, 1994*). LCSR is masculine because women who have not had enough sons continue to bear children until they have the right number of boys, after which they undergo sterilisation. The observed sex imbalances in children born over the past five years in 'upper castes' can only be due to selective abortion of female fetuses as we have ruled out other causes. Further, in group discussions the upper caste women confirmed that abortions of female fetuses were taking place. The rising trend of SRB over the past five years suggests an increasing incidence of female foeticide in the villages. That increasing number of boys are being born over recent years is evident from sex differentials in chronological age of liveborn children. Among the upper castes, boys are significantly younger than girls by 66 days ($N=1169$, $p=0.03$), and it is only 39 days among the Harijans which is not statistically significant ($N=392$).

A sex ratio of 1.27 suggests that 16.8% of female fetuses have been aborted among the upper castes in the last five years (taking 'normal' SRB as 1.06). This is an underestimate of the current rate of sex selective abortions. Firstly, we have downplayed the dramatic rise in SRB by averaging over five years (last year=1.80 vs. 5 years=1.27). Secondly, sex determination is done by poorly trained ultrasound imagers. Just as in other non-Western countries, a majority of Indian imagers have inadequate training (*Mindel, 1997*). In fact, there is no formal certification of ultrasound imagers in India. One way in which women respond to this uncertainty is that they go for scanning only at the end of the second trimester (instead of 16 to 18 weeks). Despite this, we are not certain that the sensitivity of sex determination is over 90% for boys. Thus in the desperation for sons, some male fetuses would have likely been aborted inadvertently. Our doubts are based on errors highlighted in the media (*Lancet 1983, Kakodkar, 1997*), literature (*Booth et al, 1997*) and from dialogue with imaging experts.

Therefore, the real rates of induced abortions for sex selection are likely to be higher than our above estimate.

That female foeticide is occurring in many cities of India is well known (*Miller 1985, Booth et al 1997, Kishwar, 1995*). The following observations from urban/clinic studies are consistent with our findings:

- 1) SRB increases with birth order ;
- 2) Families with only daughters are more likely to practise female foeticide.

The latter is evident from our finding that the highest distortion of SRB is among families with no sons Table-8, (see page 33). A significant outcome that our study reaches is that certain rural families are unable to tolerate even the first pregnancy to be a female and therefore will abort it. Our finding contradicts Das Gupta et al's claim that women are unlikely to use SDT for the first pregnancy (*Das Gupta and Visaria, 1996*). Their reasoning is based on the fact that deliberate neglect often spares the first girl. The extrapolation of human behaviour from female infanticide to female foeticide is fallacious. As argued in an editorial in *Lancet*, new technology will create new problems for society (*Lancet, 1994*). The evidences from Delhi (*Khanna, 1997*) as well as South Korea are also supportive of our observation (*Park and Cho, 1995, Leete, 1996*). Our data indicates that the proportion of families aborting female fetuses in the first pregnancy has been increasing over the past five years.

The increased popularity of female foeticide reported by doctors in Rohtak district is consistent with the finding that over a period of two decades the SRB of children born in MCH, Rohtak has become pronouncedly masculine (SRB for the years 1993-95 is 1.25 [N=12,166 births]). Distorted SRBs have been reported from other hospitals in this region (*Booth et al 1994, Das Gupta and Visaria, 1996*). A part of the increase may reflect discrimination against girls following foetal sex determination in place of birth. Male babies may be given the privilege of safer hospital deliveries while for females, delivery at home in the village is considered adequate. The SRB of institutional deliveries in India, predominantly an urban sample, increased from 1.06 during 1949-58 to 1.12 during the period 1981-91 (*National Commission for Women, 1994*). It may be noted that the latter estimate is based on six million live births.

The existence of relatively greater gender equality in the Harijan castes has been reported from South India (*George et al, 1994*). This is because the only economic asset that the village Harijans seem to have is their labour and so women are seen as productive members of the family. Therefore, the Harijans had no excess post-neonatal girl mortality, or longer

inter-birth interval after a girl, or more favourable SRB as compared to upper castes. This does not imply that the Harijans do not express sex preference. They do practise 'differential contraception' like the upper castes. But their intensity of preference for boys is less. The overall LCSR is 1.05 for the Harijans as against 1.59 for the upper castes. Further, for almost every birth order the LCSR is less distorted for the Harijans. It is to be noted that sex selective abortion can also raise the LCSR like differential contraception. Couples who have girls continue to abort female foetuses until they have the right number of boys, at which point they cease child-bearing. Our ethnographic information that female foeticide is much less among the Harijans is consistent with the demographic data presented.

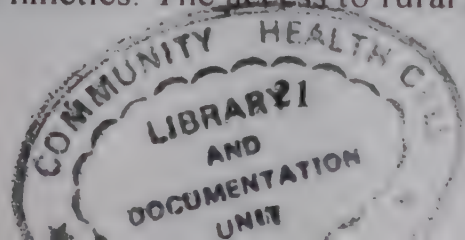
We believe our research is unique as this comprehensive enquiry provides incontrovertible evidence for the practice of female foeticide in a rural population. Both in medical anthropology and anthropological demography meticulous micro level studies with people's participation have become a standard research methodology. We have not been able to capture female foeticide at an individual level which is most unlikely, given the criminality of the offence, the collusion of medical professionals and cultural insensitivity. However, women on the whole accepted that the practice is widespread in their villages. Our field research, which has an ethnographic component, complements the available district level census data. In matters like son preference which is intensifying, information from large surveys becomes outdated soon. Consequently, village studies need to be routinely carried out to understand the trends and determinants of gender inequity in every district. In our research, we have not explored the significant health hazards of repeated late mid-trimester abortions for women. The villagers reported that abortions are usually done in unregistered village clinics (*Chowdhry, 1994*). Further, maternal depletion following abortions in an environment of extensive iron deficiency could have additional adverse consequences for women's health.

The overall sex ratio in Rohtak district is 1.18 while for Haryana it is 1.16 as per the 1991 census. The sex ratio of surviving children for both Haryana and Rohtak is 1.14. Our villages are better off than an average village in Rohtak district as far as women's status is concerned. This is based on the intimate knowledge of the second author about Rohtak district. Also, our selection criterion identifies the more enlightened villages. The emergence of women leaders in our villages is significant in that it has occurred in one of the most conservative regions of India where women have led very secluded lives. We, therefore, believe that the sex ratio of surviving children in Rohtak district is likely to be at least as masculine as in the study-

villages. The sex ratio of surviving pre-school children in a December 1997 survey of random households of rural Haryana (total population=10,000) was found to be 1.18 (*Kumar, 1998*). Furthermore, sex ratios from Sample Registration Surveys and indirect estimates from the 1981 census and the 1991 census are all supportive of such elevated child sex ratios and sex ratios at birth for Haryana (*Sudha and Rajan, 1998, Mari Bhat, 1998*). Thus these data along with our knowledge of the extensive spread of SDT clinics all over Haryana in the mid- to late eighties suggests that the findings from our study villages have relevance for the State.

There has been a tradition of fierce patriarchy in the present region of study as in some other parts of North India (*Dreze and Sen, 1996*). Women have long suffered patriarchal practices such as female infanticide, child marriage, seclusion, dowry, levirate and polygamy. Not surprisingly, Haryana has the highest overall sex ratio, the highest sex ratio at birth, the highest excess female child mortality and the lowest divorce rate for women in the country (*NFHS, 1993, GOI, 1997*). SDT clinics have been functioning in Haryana towns for about fifteen years. Mobile SDT clinics have been visiting many Haryana villages for over seven years (*Chowdhry, 1994*). The dramatic drop in fertility in Haryana during the period 1971-1991 has been associated with increased use of SDTs. The total fertility rate in rural Haryana in 1971 was 7.15 children per woman which was the highest in India and it then dropped to 4.17 by 1991 (*Krishanaji and James, 1998*). In patriarchal cultures, son preference intensifies in the transition period when fertility is declining (*Das Gupta and Visaria, 1996*).

We selected villages in this region as we wanted to highlight the imbalance that would result in case the same intensity of sex selective abortions were to take place elsewhere in India. There is no reliable data for the incidence of female foeticide but the 'Central Committee on Sex Determination' described it as an epidemic across the length and breadth of the country (*National Commission for Women, 1994*). A rough estimate of female foeticide and direct infanticide together obtained by indirect demographic techniques on census data is 1.2 million "missing girls" in India during 1981-91 (*Das Gupta and Mari Bhat, 1997*). If we attribute all the "missing girls" to feticide, this would amount to less than 1% of female births. But the first author has acknowledged that most of the selective abortions occurred during the second half of the decade and predicted that "we should expect to see more of it in 1991-2001" (*Weiss, 1996*). Therefore, the 1% figure should be cautiously interpreted as there has been a proliferation of SDT clinics in a few places from the late eighties and in most parts of the country by early to mid nineties. The access to rural populations enhanced substantially



after sophisticated ultrasound machines became widely available in India from the early nineties. Historically, the East Asian experience suggests that it takes less than a decade of spread of clinics for a dramatic rise in SRB to occur. Yet another comparative study of the 1981 Indian census and the 1991 census with a different methodology revealed that there has been a marked shift towards excess masculinity of SRB in 1991 in the North-West; and in North India with the exception of rural areas of Bihar and U.P. (*Sudha and Rajan, 1998*). These present researchers attribute this shift to female feticide.

Further, our greatest concern is that foemale feticide is becoming popular even in South India where status of women has been historically much better. Upto as late as 1987 there were virtually no SDT clinics in the South as opposed to the North and western India. But over the last two to five years in the Southern states of Tamil Nadu and Andhra, clinics have started mushrooming in small towns and even in semi-urban areas. We are aware from thirteen years of field work in Tamil Nadu that rural women have been increasingly resorting to SDTs in recent years. Though the present level of incidence may not result in a serious distortion of SRB at the State level yet the trends observed in north-west India and elsewhere indicate that it is just a matter of time before the distortions become evident in population data, unless these States immediately take determined actions to prevent emergence of more SDT clinics and the abuse of these tests.

Advances in medical technology for gender identification of foetuses have made SDTs more convenient and less risky for Indian women over the last two decades. Initially, chorionic villus biopsy and amniocentesis were the techniques used. Ultrasonography has become the most widely used method of sex determination since the early nineties. Besides being non-invasive, it also requires no laboratory set-up. Following the adoption of policies of economic liberalisation by India in 1991, several multi-national companies have entered the domestic ultrasound market. Some have even begun to manufacture the equipment in India. Increased competition has led to the appearance of lower priced portable models, flexible credit and dependable service for the customer. Doctors motivated in part by multinational marketing muscle and considerable financial gains are increasingly investing in ultrasound scanners. In South Korea and China, domestic production of ultrasound machines has facilitated increased utilisation of SDTs (*Cho and Hong, 1995*).

The general lack of gender sensitivity among Indian doctors and other professionals has contributed to the popularisation of SDTs. Just as in China, the first use of SDTs in India

was in a government institution. Those researchers advocated the use of amniocentesis for gender identification of fetuses and claimed that in the foreseeable future, sex selective abortions will not result in increasing the number of males (*Verma et al, 1975*)! There are doctors who wanted the government to promote SDTs to reduce population growth (*Lancet, 1983*). Many gynaecologists see female foeticide as a medical solution to son preference and find nothing unethical in it (*Lancet, 1983*). Some economists argue that SDTs would result in better status of women based on 'supply and demand' logic, ignoring that cultural practices such as son preference are not predictable on the basis of economic principles (*Arora, 1996*). For over two decades, abortions (MTP) were promoted by the Indian government to reduce fertility. Also, traditional methods of abortion, though unsafe, are still used to space and limit family sizes in rural India. Like traditional Chinese and Japanese societies, rural Indians have beliefs and methods which supposedly determine the sex of the fetus (*Kakar, 1980, Khanna, 1997*). There is no evidence to suggest that these are sensitive enough to distort sex ratios. But they are accepted on 'faith' and too often abortion follows when the prediction is female. Considering all this, the widespread acceptance of modern methods of sex determination and selective abortion of female fetuses in parts of India should not have been a revelation.

Some professionals hope that the national law (1994) against SDT will prevent female foeticide. The experience of Maharashtra State Law (1998) does not give much ground for optimism. Before the legislation, in Bombay city alone, the number of SDT clinics went up from 10 to 248 (during 1982-87). After the legislation the practice just went underground. Over the last ten years not even one doctor has been penalised for breaking the law (*Kakodkar, 1997*). Some women activists argue that lobbying for gender-just laws is not worthwhile as the State would not implement them (*Kishwar, 1995, Menon, 1993*). This cynicism is not warranted as the State itself has an obligation to set desirable ethical standards as also oversee their adherence. The profound inaction of national bodies like Indian Medical Association (IMA) and Medical Council of India (MCI) on SDTs by doctors for twenty years despite representations is proof of gross professional indifference to gender equity (*Lancet 1983, Kakodkar, 1997, Mazumdar, 1992*). However, in the recent past the National Human Rights Commission (NHRC) asked MCI to take cognisance of the law, following which the MCI decided to amend the code of medical ethics in order to initiate disciplinary proceedings against errant doctors (*National Human Right Commission, 1996*).

Health workers did not have proper records of births and deaths as they seldom visit

villages in Haryana though their salaries are six times higher than those of Aanganwadi Workers (AWWs). A similar finding on vital events was reported from another district. The Female Health Workers (FHWs) had no records of births in some villages. In most villages the FHWs were not even familiar with the women in their villages though they have been working there for over three years. The coverage of ante-natal services is poor. Though Haryana is economically prosperous and rural people have access to health facilities, about 70% of deliveries are conducted at home by untrained workers (Das Gupta, 1996, Jejeebhoy, 1997). Infant and child mortality is unacceptably high as compared to the relatively poorer southern states. A reduction in this mortality will likely reduce the gender disparity in post neonatal mortality rates. Unfortunately, the entire focus of the health system is on fertility reduction. Till last year this was based on an elaborate system of targets of government workers, money for acceptors and incentives for health staff and even coercion of women (Bose, 1996, Kumar 1997). This led to widespread falsification of data and corruption (Bose, 1996) and alienated the health system from the people. The contraceptive burden is almost entirely on women. The government claims that there is a change in approach from the old "method specific contraceptive targets" to "client centered performance goals" (Kumar, 1997). However, Rohtak FHWs report that unofficial targets still remain though monetary incentives have been withdrawn.

RECOMMENDATIONS

Dreze and Sen have pointed out that the persistence of extraordinarily high levels of gender inequality and female deprivation are among India's most serious social failures, and few other regions in the world have achieved so little in promoting gender justice (*Dreze and Sen, 1996*). To raise the status of women, it is imperative for the State to be aggressive about reducing existing gender disparities in education, economic opportunities, inheritance laws, property rights and political power. One step in the right direction is the then Indian Prime Minister's "Girl Child Scheme" announced in August 1997, whereby two infant girls of every poor family will receive monetary incentives till they become adults (*TOI, 1997*). This will promote fertility reduction with gender equity. Further, public action has to challenge the many ways in which patriarchy demeans women. Men have to accept responsibility for contraception. Doctors and professional medical organisations by far have been indifferent to such gender concerns. Ethical medical practice is imperative for enforcement of the 1994 law against pre-natal gender identification of fetuses (*Kakodkar, 1997, Dickens, 1986*). Medical education has to inculcate gender sensitivity in students. The focus of the Health Department has to change from forcing contraception on women to enhancing women's health and reducing the gender disparities at birth and in child survival. Otherwise the incidence of female foeticide will continue and increase. Women's health will be the first casualty, leading to disastrous social consequences for the well-being of our women and our society.

ACKNOWLEDGEMENTS

The efforts of Ishwanti and other women interviewers are much appreciated. We most gratefully acknowledge the assistance of the village level female literacy activists, some of whom spent several months with us in the field. We thank the Rohtak district leaders of Health Workers' Union and the Chowkidars' Union for taking the trouble to visit the study-villages. The co-operation received from the village Anganwadi workers, chowkidars and Female Health Workers is acknowledged. The generosity of over twenty people in SRC & BGVS who patiently assisted in our work for eighteen months is appreciated. We also thank A.S. Sharif, S. Clark, T.J. John, M. Bhat, V. Patel., P. & L. Visarias, L. Caleb, S. Almroth, C.R. Soman and R. Palmer (DEC) for their contributions. This field study was supported in part by the Haryana Vigyan Manch, Haryana and also by Pondicherry Science Forum and Bharat Gyan Vigyan Samiti, New Delhi.

TABLE-1**CHARACTERISTICS OF STUDY FAMILIES (N=1017)**

CHARACTERSTIC	VARIABLE	VALUE	
DEMOGRAPHIC			
	WIFE - Mean Age	25	
	HUSBAND - Mean Age	29	
	CHILDREN - Mean no.	2.60	
	SON - Mean no.	1.28	
	ABORTIONS (%)	10.3	
EDUCATIONAL (%)		Wife	Husband
	Illiterate	40.1	9.3
	Primary & Neoliterate	7.0	3.4
	5-10 years of school	47.2	68.9
	11-12 years of school	5.6	12.3
	College	1.7	6.1
SOCIAL (%)			
CASTE	Harijan	23.6	
	Artisanal and Minor	10.6	
	Brahmin	4.3	
	Jat & Yadav	61.5	
SECOND MARRIAGE	Husband	3.4	
	Wife	1.2	

TABLE-2

**PERCENTAGE OF WOMEN STERILISED BY NUMBER OF
SURVIVING CHILDREN AS AGAINST NUMBER OF SURVIVING SONS**

		<u>NO.OF SURVIVING SONS</u>					FAMILIES (N)
		0	1	2	3	4	
<u>NO.OF SURVIVING CHILDREN</u>	0	0					27
	1	0	3				258
	2	2	14	51			336
	3	0	36	76	78		246
	4	0	20	71	44	0	102
	5	0	30	42	100	0	25
	6 +	0	20	33	100	50	19

Note: 4 women were excluded as they died prematurely.

TABLE-3

**FAMILY SIZE SEX RATIO (FSSR) AND SEX RATIO OF LAST
BORN CHILD (LCSR)**

FOR ALL FAMILIES

FAMILY SIZE	LIVE BORN		FSSR	LCSR
	M	F		
1	134	95	1.41	1.40
2	359	259	9.32	1.33
3	352	347	1.01	1.49
4	233	303	0.77	1.48
5	120	165	0.73	2.39
6	45	63	0.71	1.43
7	36	55	0.66	1.50
8	17	31	0.55	0.50
9	3	15	0.20	0.00
10	1	9	0.11	0.00
Total	1300	1342	0.97	1.44

TABLE-4

**FAMILY SIZE SEX RATIO (FSSR) AND SEX RATIO
OF LAST BORN CHILD (LCSR)**

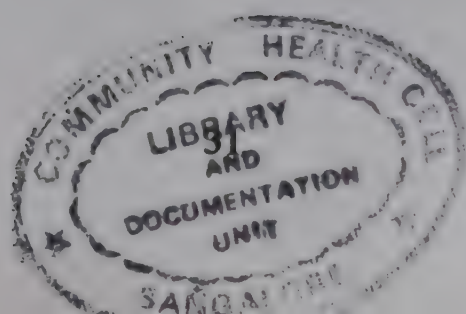
FOR STERILISED FAMILIES

FAMILY SIZE	LIVE BORN		FSSR	LCSR
	M	F		
1	3	0	*	*
2	115	21	5.48	5.60
3	193	122	1.58	2.25
4	116	116	1.00	2.93
5	50	60	0.83	5.00
6	21	27	0.78	1.00
7	14	14	1.00	1.00
8+	3	16	0.19	0.00
Total	515	376	1.37	2.91

* Ratios could not be calculated as denominator is 0.

TABLE-5**SEX SPECIFIC SURVIVAL OF LIVE-BORNS BY BIRTH COHORTS**

BIRTH COHORTS (Recent/Earlier than 5 Years)	SURVIVORS		DEAD		TOTAL LIVE-BORNS	
	M	F	M	F	M	F
< 5 Years	787	654	66	54	853	708
> / = 5 Years	358	528	89	106	447	634
TOTAL	1145	1182	155	160	1300	1342



WH 142
117022 pur

TABLE-6

SEX SPECIFIC DEATH RATES OF CHILDREN BORN IN PAST 5 YEARS
BY AGE AT DEATH

		Death Rate (%)			
AGE AT DEATH (DAYS)		0 TO < 7	7 TO < 28	28 TO < 365	> /=365
SEX	M	3-99	0.70	2.58	0.47
	F	2.40	0.71	2.97	1.55
TOTAL DEAD (N)		51	11	43	15

TABLE-7

SEX RATIO AT BIRTH (SRB) OF CHILDREN BORN IN PAST FIVE YEARS
BY BIRTH ORDER AND BY CASTE

CASTE	BIRTH ORDER						TOTAL SRB	TOTAL(N)
	1	2	3	4	5	6+		
UPPER CASTES	1.26	1.19	1.34	1.25	1.89	1.25	1.27	1169
HARIJAN	1.15	1.04	0.77	1.15	1.09	1.06	1.02	392
ALL CASTES	1.24	1.16	1.16	1.22	1.59	1.14	1.20	1561

TABLE-8

**SRB BY BIRTH ORDER VS. PRECEDING NUMBER OF
CHILDREN BY SEX**

(for Upper caste children born in past 5 years)

BIRTH ORDER	PRECEDING NUMBER OF CHILDREN BY SEX		N	SEX RATIO AT BIRTH
	MALES	FEMALES		
1	0	0	364	1.26
2	1	0	189	1.01
	0	1	175	1.47
3	2	0	29	0.93
	1	1	139	1.32
	0	2	72	1.57
4	3	0	2	1.00
	2	1	20	0.25
	1	2	69	2.25
	0	3	26	1.60
5	4	0	1	*
	3	1	5	1.50
	2	2	17	1.13
	1	3	22	2.67
	0	47		2.50

* NOTE: There was no girl in this group and therefore the ratio could not be calculated.

REFERENCES

- Arnold, F. (1996): 'Son Preference in South Asia', presented at International Union for Scientific Study of Population : Seminar on 'Comparative Perspectives on Fertility Transition in South Asia', December 17-20, Islamabad.
- Arora, D. (1996): 'The Victimising Discourse: Sex Determination Technology and Policy', *Economic and Political Weekly*, 31 : 420-24.
- Athreya, V. B., S. R. Chankath (1997): 'Gender Discrimination Strikes: Disquieting Aspects of Early Neonatal Deaths in Tamil Nadu', *Frontline*, Chennai, July 11, p 94.
- Booth, B. E., M. Verma, R. S. Bari (1994): 'Foetal Sex Determination in Infants in Punjab, India: Correlations and Implications', *Br. Medical Journal*, 309: 1259-61.
- Bose, A. (1996): 'Demographic Transition and Demographic Imbalance in India', *Health Transition Review*, 6 Supplement, 89-99.
- Chhachhi, A., C. Satyamala (1983): 'Sex Determination Tests: A Technology Which Will Eliminate Women', *MFC Bulletin*, 95: 3-5.
- Cho, N. H. M. S. Hong (1995): 'Effects of Induced Abortion and Son Preference on Korea's Imbalanced Sex Ratio at Birth', *Manushi*, 86.
- Coale A., J. Banister (1994): 'Five Decades of Missing Females in China', *Demography*, 31:459-86.
- Chowdhry, P. (1994): *The Veiled Women: Shifting Gender Equations in Rural Haryana 1880-1990*, Oxford University Press, Delhi.
- Das Gupta, M. (1996): 'Life Course Perspectives on Women's Autonomy and Health Outcomes', *Health Transition Review*, 6 Supplement, 213-31.
- Das Gupta, M., L. Visaria (1996): 'Son Preference and Excess Female Mortality in India's Demographic Transition' in 'Sex Preference for Children and Gender Discrimination in Asia', *Research Monograph 96-02*, Korean Institute for Health and Social Affairs and United Nations Population Fund; Seoul, January.
- Das Gupta, M., P. N. Mari Bhat (1997): 'Fertility Decline and Increased Manifestation of Sex Bias in India', *Population Studies*, 51: 307-15.
- Dickens, B. M. (1986): 'Prenatal Diagnosis and Female Abortions : A Case Study in Medical Law and Ethics', *Journal Medical Ethics*, 12: 143-44.
- Dreze, J., A. Sen (1996): *India: Economic Development and Social Opportunity*, Oxford University Press, Delhi.
- Forum against Sex Determination and Sex Preselection (1993): 'Using Technology, Choosing Sex: The Campaign against Sex Determination and the Question of Choice' in Shiva, V. (ed.), *Minding our Lives*, Kali for Women, New Delhi.
- George, S. M. (1997): 'The Government Response to Female Infanticide in Tamil Nadu: From

Recognition Back to Denial?' *Reproductive Health Matters*, 10: 124-32.

George, S. M., R. Abel and B. D. Miller (1992): 'Female Infanticide in South Indian Villages', *Economic and Political Weekly*, 27: 1153-56.

George, S. M. J. D. Haas, M. C. Latham (1994): 'Nutrition Education Can Reduce Gender Inequity in Growth of Pre-school Children in Rural South India', presented at American Institute of Nutrition Meeting, EB, April, Anaheim.

Government of India, *Women in India: A Statistical Profile-1997*, Department of Women and Child Development, New Delhi.

Jejeebhoy, S. J. (1997): 'Addressing Women's Reproductive Health Needs: Priorities for the Family Welfare Programme', *Economic and Political Weekly*, 32: 475-84.

Jejeebhoy, S. J., R. J. Cook (1997): 'State Accountability for Wife Beating: The Indian Challenge', *Lancet*, 349, s110.

Kakar, D. N. (1980): *The Traditional Birth Attendants in Village India*, New Asian Publishers, Delhi.

Kakodkar, P. (1997): 'Sex Determination Tests Continue in Maharashtra', *The Times of India*, June 5, p 7, New Delhi.

Khanna, S. K. (1997): 'Traditions and Reproductive Technology in an Urbanising North Indian Village', *Soc Sci Med*, 44: 171-80.

Kishwar, M. (1995): 'When Daughters Are Unwanted: Sex Determination Tests in India', *Manushi*, 86: 15-22.

Krishnaji, N., K. S. James (1998): 'Fertility Transition in India: Are Generalisations Possible', presented at Workshop on Fertility Transition in South India in Comparative Perspective, Trivandrum, April 6-8, organised by Centre for Development Studies, Trivandrum and French Institute of Pondicherry.

Kumar, S. (1994): 'Legislation of Prenatal Sex-Determination in India', *Lancet*, 344, 399. (1997): 'World Bank Boosts India's Population Project', Policy and People, *Lancet*, 349:1754.

Lancet (1974): 'Selecting the Sex of One's Children', editorial, i: 203-04.

- (1983): 'Misuse of Amniocentesis', *India Correspondent*, i: 812-13.

- (1990): 'Is it a Boy?', editorial, 336, 87-88.

Leete, R. (1996): 'Son Preference in Asia: Issues and Considerations' in 'Sex Preference for Children and Gender Discrimination in Asia', Research Monograph, 96-02, Korean Institute for Health and Social Affairs and United Nations Population Funds, January, Seoul.

Mazumdar, V. (1992): 'Amniocentesis and Sex Selection', presented at a Round Table on 'Women, Equality and Reproductive Technology: Some Ethical Issues' held at World Institute for Development Economics Research, August 3-6, Helsinki.

Making Women Count, Editorial (1997): *The Times of India*, August 18, page 12, New Delhi.

Menon, N. (1993): 'Abortion and the Law: Questions for Feminism', *Canadian Journal of Law*, 6:103-18.

- Miller, B. D. (1995): 'Prenatal and Postnatal Sex Selection in India: The Patriarchal Context, Ethical Questions and Public Policy', December, Working Paper No. 107, Women in International Development Publication Series, Michigan State University, East Lansing.
- Mindel, S (1997): 'Role of Imager in Developing World', *Lancet*, 350: 426.
- Mutharayappa R., M. K. Choe, F. Arnold and T. K. Roy (1997): 'Son Preference and Its Effect on Fertility in India', *National Family Health Survey Subject Reports*, IIPS, Mumbai and E.W. Centre, Hawaii, Number 3, March.
- National Commission for Women (1994): *Annual Report, 1992-93: Assessment of the Progress of Development of Women*, New Delhi, 56-57.
- National Family Health Survey, Haryana (1993): Population Research Centre, Chandigarh and IIPS, Mumbai.
- National Human Rights Commission (1996): *Annual Report 1995-96*; Review of laws, implementation of treaties and other international instruments of human rights - 'Rights of the Child' - Female foeticide and infanticide, p 26, New Delhi.
- Okun, B. S. (1996): 'Sex Preferences, Family Planning and Fertility: An Israeli Sub-population in Transition', *Journal of Marriage and the Family*, 58: 469-75.
- Parikh, F. (1998): 'Sex Selection by IVF: Detrimental to Indian Women', *Issues Medical Ethics*, 6:55.
- Park, C. B., N. H. Cho (1995): 'Consequences of Son Preference in a Low Fertility Society: Imbalance of the Sex Ratio at Birth', in *Korea, Population Development Review*, 21:59-84.
- Premi, M. K. (1994): 'Female Infanticide and Child Neglect as Possible Reasons for Low Sex Ratio in the Punjab, 1881-1931', presented at the workshop on 'Abortion, Infanticide and Neglect in Population History', Kyoto, October 20-21, sponsored by International Union for the Scientific Study of Population and International Research Centre for Japanese Studies.
- Rajan, I. S., U. S. Mishra, K. Navaneetham (1992): 'Decline in Sex-Ratio: Alternative Explanation Revisited', *Economic and Political Weekly*, 27: 2505-08.
- Ramsay, S. (1993): 'Sex Selection in the UK', *Lancet*, 341:1145.
- Singh, I. J. (1997): 'Agricultural Situation in India and Pakistan', *Economic and Political Weekly*, 32: A90-91.
- Sudha, S., I. S., Rajan (1988): 'Intensifying Masculinity of Sex Ratios in India: New Evidence 1981-91', Working paper 288, CDS, Trivandrum, May, 1998.
- Times of India* (1997): 'Making Women Count', editorial, August 18, p. 12, New Delhi.
- Verma, I. C., R. Joseph, K. Verma, K. Buckshee and O. P. Ghai (1975): 'Pre-natal Diagnosis of Genetic Disorders', *Indian Pediatrics*, 12:381-85.
- UNDP (1997): *Human Development Report*, Oxford University Press, New York, 52.
- UNICEF (1994): *The Right to Be a Child*, UNICEF, India, March, New Delhi.
- Weiss, R. (1996): 'Anti-Girls Bias Rises in Asia, Studies Show: Abortion Augmenting Infanticide, Neglect', *Washington Post*, May 11: p A 1 and A 16.